

claims 1 and 2 may be found in the specification as originally filed, at least at pages 7, 8 and 9.

The objection to claims 2 and those depending therefrom under 37 CFR 1.75(c), is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that the claims, as amended herein, further limit the features of base claim 1, the only independent claim. Specifically, Applicants respectfully submit that the language regarding the location of the spectrum peaks in independent claim 1 recites that there is at least one peak from the mixture that is different (i.e., either at a higher wavelength, or at a lower wavelength) than any one of the numerous peaks found in each of the individual separate compounds used to make the recited light-emitting zone mixture. Thus, the claim 1 peak may be in the middle of other peaks that happen to exactly match the spectrum peaks found in the individual separate compounds of the mixture, or the claim 1 peak may be higher or lower in wavelength as compared to the spectrum peaks of the individual compounds.

Dependent claim 2, by comparison, further limits the location of the at least one peak of the light emitting zone (i.e., of the mixture) to a wavelength that is longer than ~~any~~ of the spectrum peaks of the individual compounds, and is thus a proper dependent claim under 37 CFR 1.75(c). The above discussion may be supplemented by reference to the discussion on page 58 of the specification as well as figure 5. For at least the above noted reasons, applicants respectfully request that this objection, as set forth in the Office Action, be withdrawn.

The rejection of claims 1-6, 19-22, 35-40, 53-56, 69-74, 87-90 and 103 under 35 U.S.C. §102(b) as being anticipated by Tokailin et al. (U.S. Patent No. 5,126,214, hereinafter referred to as "Tokailin") is hereby traversed and reconsideration thereof is

respectfully requested. Applicants respectfully submit that claims 1-6, 19-22, 35-40, 53-56, 69-74, 87-90 and 103, as amended herein, are patentably distinct over the cited reference.

Independent claim 1, as amended herein, recites a organic electroluminescence device having at least an anode, a light-emitting zone and a cathode, wherein the light-emitting zone comprises a mixture containing at least two compounds, and a spectrum of the luminescence from the light-emitting zone includes at least one peak at a wavelength which is different from spectrum any one of fluorescent peak positions of the at least two compounds included in light-emitting zone. Claims 2-6, 19-22, 35-40, 53-56, 69-74, 87-90 and 103 depend from independent claim 1, either directly or indirectly, and recite additional patentable features over the base claim.

Dependent claim 2, as amended herein, recites that the spectrum of the luminescence from the light-emitting zone includes at least one peak at a wavelength which is longer than any one of the fluorescent peak positions of the separate compounds included in the light-emitting zone.

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Dependent claims 3 and 4, recite that the light-emitting zone comprises a mixture containing at least two electroluminescent materials.

Dependent claims 5 and 6, recite that the light-emitting zone comprises a mixture containing at least one electroluminescent material and one fluorescence material.

Dependent claims 19-22, recite that the light-emitting zone comprises a mixture containing at least one fluorescence materials such as a substituted or non-substituted aromatic hydrocarbon, or a substituted or non-substituted fused polycyclic hydrocarbon, or a substituted or non-substituted heterocyclic compound, and a substituted or non-substituted fused heterocyclic compound.

Dependent claims 35-40 and 53-56, recite that the light-emitting zone is adjacent to the anode.

Dependent claims 69-74 and 87-90, recite that a hole-injecting zone is present between the anode and the light-emitting zone.

Dependent claim 103, recites that an electron injecting zone is present between the cathode and the light emitting zone.

The cited art of Tokailin discloses an electroluminescent display element that has one electroluminescent material to emit ultraviolet radiation, and a fluorescent material that captures the UV ray and converts it to visible light. Using various fluorescent materials enables the cited reference to produce the three elementary colors of blue, green and red. The electroluminescent material disclosed is a solid (col. 10, line 15), and is vacuum deposited as a molecular accumulated film. In the background section of the cited reference, note is made of the problems associated with mixed electroluminescent and fluorescent materials, specifically that of poor chromaticity (col. 1, line 37). As

compared to previous electroluminescent display elements, the cited reference has a structure that emits shorter wavelengths that are consequently easier to find fluorescent frequency shifting materials for emitting visible light at all frequencies (col. 3, line 7). There are also disclosed electron and hole injection layers that are vacuum deposited as a molecular accumulated films on the light emitting film (col. 11, line 33). The emitted light from the electroluminescent material is wavelength shifted to longer wavelengths by a fluorescent dye which are in a solid state (col. 16, line 36), and the concentration of the dye is limited to prevent "quenching" problems (col. 17, line 5). The two films, (i.e., the electroluminescent and the fluorescent), are separate films that each have specific thickness', as may be seen in the discussion at column 17, lines 10-37, and thus the light emitting layer is not a mixture. If the fluorescent film is too thick, then only the single color escapes, and if it is too thin then not enough visible light is emitted.

Applicants respectfully submit that the cited reference does not contain any teaching with regard to the light emitting zone having at least one peak that is different from the separate compounds of the mixture, nor does the outstanding Office Action provide any indication of where such a suggestion may be found in the cited reference.

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Applicants further respectfully submit that the cited reference does not contain any suggestion that the light emitting region is a mixture, but rather discloses that there are two separate layers (see col. 17), and discusses in the background section the problems of mixed films. Thus, the cited reference does not contain recited features of the claims and, in addition, is seen as teaching away from the claimed arrangement by, for example, teaching laminating two layers of two different compounds rather than providing a

mixture, as recited in the present claims. Therefore, applicants respectfully submit that the claimed features of a different wavelength for the mixture of compounds is not disclosed or suggested in the cited reference.

More specifically, Applicants respectfully submit that the cited reference does not contain at least the recited feature of "*... organic electroluminescence device having at least an anode, a light-emitting zone and a cathode, wherein the light-emitting zone comprises a mixture containing at least two compounds, and a spectrum of the luminescence from the light-emitting zone includes at least one peak at a wavelength which is different from spectrum peak positions of the at least two compounds included in light-emitting zone ...*", as set forth in applicant's independent claim 1, as amended herein.

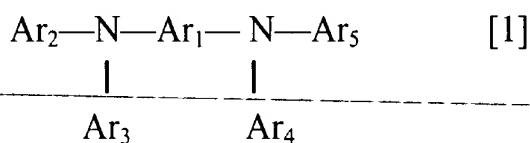
The same type of language is found in dependent claim 2, as amended herein. As noted above, the cited reference does not disclose either a mixture of compounds or a different wavelength. Therefore, since the cited reference does not contain each and every feature of the claimed invention, the cited reference can not anticipate independent claim 1, nor the dependent claims associated with the independent claim.

For at least the above noted reasons, applicants respectfully request that this rejection, as set forth in the Office Action, be withdrawn.

The rejection of claims 7-12, 23-28, 41-46, 57-62, 75-80, and 91-96 under 35 U.S.C. §103(a) as being unpatentable over Tokailin, is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that claims 7-12, 23-28, 41-46, 57-62, 75-80, and 91-96 are patentably distinct over the cited reference, whether taken alone or in any combination with well known prior art.

Independent claim 1, as amended herein, has features discussed above with reference to the previous rejection. Claims 7-12, 23-28, 41-46, 57-62, 75-80, and 91-96 depend from independent claim 1, either directly or indirectly, and recite additional patentable features over the base claim.

Dependent claims 7-12, recite that the light-emitting zone is a mixture containing at least one electroluminescent material represented by the following formula [1]



wherein Ar<sub>1</sub> designates a substituted or non-substituted arylene group having 5 to 42 carbon atoms, Ar<sub>2</sub> to Ar<sub>5</sub> designate, independently with one another, a substituted or non-substituted aryl group having 6 to 20 carbon atoms.

Dependent claims 23-28, recite that the light-emitting zone comprises a mixture containing at least one fluorescence materials such as a substituted or non-substituted

aromatic hydrocarbon, or a substituted or non-substituted fused polycyclic hydrocarbon, or a substituted or non-substituted heterocyclic compound, and a substituted or non-substituted fused heterocyclic compound.

Dependent claims 41-46 and 57-62, recite that the light-emitting zone is adjacent to the anode.

Dependent claims 75-80 and 91-96, recite that a hole-injecting zone is present between the anode and the light-emitting zone.

The cited art of Tokailin is discussed above with reference to the previous rejections.

Applicant respectfully submits that since the base claim 1 has been shown above to not be anticipated by the cited reference since Tokailin does not suggest or disclose the at least the claimed feature of "mixed layers" (shown above to be taught against in the cited reference), then at least the combination of claimed features of "~~... organic~~ electroluminescence device having at least an anode, a light-emitting zone and a cathode, wherein the light-emitting zone comprises a mixture containing at least two compounds, and a spectrum of the luminescence from the light-emitting zone includes at least one peak at a wavelength which is different from spectrum peak positions of the at least two compounds included in light-emitting zone ...", still would not be present in the cited prior art, whether taken alone or in any combination with other well known art.

The claims that depend either directly or indirectly from the sole independent claim are therefore in patentable condition at least as depending upon a base claim shown to be patentable over the suggested combination of references. For at least the above noted reasons, applicant respectfully requests that this rejection, as set forth in the Office Action, be withdrawn.

The rejection of claims 13-18, 29-34, 47-52, 63-68, 81-86, and 97-102 under 35 U.S.C. §103(a) as being unpatentable over Tokailin in view of Hitoshi et al. (Japan Patent No. JP 11-074079, hereinafter referred to as "Hitoshi"), is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that claims 13-18, 29-34, 47-52, 63-68, 81-86, and 97-102 are patentably distinct over the cited references, whether taken alone or in any combination.

Independent claim 1, as amended herein, has features discussed above with reference to the previous two rejections. Claims 13-18, 29-34, 47-52, 63-68, 81-86, and 97-102 depend from independent claim 1, either directly or indirectly, and recite additional patentable features over the base claim.

Dependent claims 13-18, recite that at least one of Ar<sub>2</sub> to Ar<sub>5</sub> of the compound represented by the formula [1] has a substituted or non-substituted styryl group as a substituent.



Dependent claims 29-34, recite that the light-emitting zone comprises a mixture containing at least one fluorescence materials such as a substituted or non-substituted aromatic hydrocarbon, or a substituted or non-substituted fused polycyclic hydrocarbon, or a substituted or non-substituted heterocyclic compound, and a substituted or non-substituted fused heterocyclic compound.

Dependent claims 47-52 and 63-68, recite that the light-emitting zone is adjacent to the anode.

Dependent claims 81-86 and 97-102, recite that a hole-injecting zone is present between the anode and the light-emitting zone.

The cited art of Tokailin is discussed above. The cited art of Hitoshi discloses an electroluminescent element with high brightness that has the specific compound in a luminous layer and in a hole transport layer. The cited reference of Hitoshi is used in the outstanding Office Action to show that the missing feature of the Tokailin reference of the use of amine compounds is known in the art.

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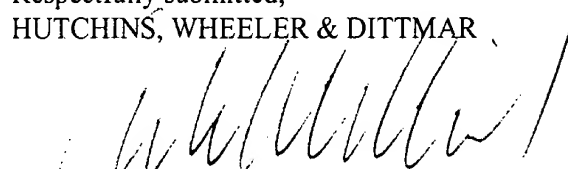
Applicants respectfully submit that the base claim has been shown above to be non obvious and not anticipated by the Tokailin reference, and since the feature of the use of amine compounds found in the Hitoshi reference has no impact upon the previous discussion and arguments, (specifically that there is no suggestion of a spectrum peak that is different in the mixture of the light emitting zone from the spectrum peaks of any one

of the separate compounds). Therefore, the dependent claims at issue are patentable at least as depending upon a base claim shown to be patentable over the cited references. In other words, the deficiencies of the Tokailin reference with respect to independent claim 1 are not overcome by the addition of the Hitoshi reference. For at least the above noted reasons, applicant respectfully requests that this rejection, as set forth in the Office Action, be withdrawn.

Based on the above, applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-951-6676.

Respectfully submitted,  
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